Department of Water Resources
California Irrigation Management Information System
Weather Station Operation and Maintenance

Overview

The Department of Water Resources' (DWR) objective in operating the weather station network is to collect and disseminate high quality, accurate, and reliable irrigation management data (ETo) to the public. To meet this objective, DWR is standardizing the operations and maintenance of the weather station network. All the weather stations in the CIMIS net- work are virtually identical, in that they all have the same equipment and sensors and operate similarly. All stations have their equipment and sensors mounted on a mast which is mounted on a tripod base. The sensors and their heights are as follows: .

Sensor	Sensor Heights
Pyranometer (solar radiation)	2 meters
Net Radiometer (net radiation)	1 meter
Soil Temperature Sensor	15 centimeters below ground level
Air Temperature Sensor	1.5 meters
Humidity Sensor	1.5 meters
Anemometer (wind speed)	2 meters
Wind Vane (wind direction)	2 meters
Precipitation Gauge	1 meter

Operation

A small datalogger (a small microprocessor) mounted on the mast of each station is connected to the electronic sensors by wires. Once every minute, the datalogger takes a reading of each sensor and records it. It continues for one hour, then averages the 60 readings for an hourly average, or accumulates the 60 readings for an hourly total, and stores all these in its memory. It continues collecting data in this manner throughout the day (midnight to midnight). After 24 hours have elapsed, the datalogger then calculates the daily averages and totals using the 24 hourly averages and totals and stores them. The data- loggers also determines the maximum and minimum temperatures and relative humidities. These values are the highest and lowest of the one-minute readings during the day.

After 12:00 midnight (always Pacific Standard Time) a microcomputer located with the main CIMIS computer begins the interrogations of the stations. This communication is done using telephone lines. Each station has its own telephone service and modem. The microcomputer makes a phone connection with a datalogger and the data is dumped to the micro- computer. This continues through the early morning hours. The majority of the stations will be interrogated by 4:00 a.m. Some stations will not answer the phone call from the microcomputer during these early morning hours due to problems with the telephone lines themselves. Usually these stations will answer the telephone by 9:00 or 10:00 a.m.

The collected data is dumped to the CIMIS computer every hour. The CIMIS computer then performs three tasks: 1) Reference Evapotrans- piration (ETo) is calculated (refer to "Reference

Evapotranspiration/ Crop Coefficients" in the Main Menu), 2) the data is run through the quality control program and flags are placed appropriately (refer to "Quality Control Criteria" in the Main Menu), and 3) the data is filed in disk storage for interrogation by CIMIS information requestors.

Maintenance

All DWR maintained CIMIS weather stations are maintained according to standards developed by DWR. Those stations owned by DWR are maintained by DWR staff or with help from local agencies or people. Stations in the CIMIS network owned by others are either DWR maintained or maintained by the owners (in which case they may or may not be maintained to DWR's standards). All the weather stations in the CIMIS network are identified as to whether they are DWR maintained (M-DWR) or maintained totally by others (NM-DWR). DWR has no control over making sure the weather data from NM-DWR stations is accurate or reliable.

Maintenance standards call for a maintenance visit every 3-4 weeks during the warmer months of the year. Visits decrease to about every five or six weeks in the cooler months. The main purpose of the maintenance visit is to check the sensors for accuracy and/or operation and to clean or replace sensors as required. The grass which is under each weather station site is mowed regularly to a height of about three inches. The grass is irrigated and fertilized to keep it actively growing. DWR maintained stations are visited by DWR staff out of DWR's District Offices. If you have any questions about weather station locations, siting enviornment, data or possible cooperation with a new weather station, please call one of the four DWR District Offices listed below:

Northern Sacramento Valley and Northeastern California Stations:

Northern District
2440 Main Street
P. O. Box 607
Red Bluff, CA 96080
Jamie P. Dubay (530) 529-7376

Sourthern Sacramento Valley and Northern San Joaquin Valley Stations:

Central District
3251 "S" Street
Sacramento, CA 95816-7017
Mark Rivera (916) 227-7603

Central and Southern San Joaquin Valley and Monterey Bay Area Stations:

San Joaquin District
3374 East Shields Avenue
Fresno, CA 93726
Steve Ewert (559) 230-3334

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Southern Coastal and Desert Areas:

Southern District
P. O. Box 29068 (91209-9068)
770 Fairmont Avenue
Glendale, CA 91203-1035
Sergio Fierro (818) 543-4652

Sacramento Headquarters:

Department of Water Resources
Water Efficiency Office
P.O. Box 942836
Sacramento, CA 94236-0001
David Moellenberndt (916) 327-1792

All DWR maintained stations are calibrated for accuracy by DWR twice a year. Stations' sensors are compared against a set of standardized sensors used only for calibrations.